

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1-7. (Cancelled)
8. (Currently Amended) A method [[Method]] for assessing feeding and/or weight gain pattern in a subject, comprising measuring ~~the measurement of~~ at least two melanocortin peptides in a sample obtained from said subject, calculating ~~the calculation of~~ the ratio of the measured melanocortin peptides, and comparing ~~comparison of~~ the value of the ratio with a reference value.
9. (Currently Amended) A method [[Method]] for predicting risk of obesity in a subject, comprising measuring ~~the measurement of~~ at least two melanocortin peptides in a sample obtained from said subject, calculating ~~the calculation of~~ the ratio of the measured melanocortin peptides, and comparing ~~comparison of~~ the value of the ratio with a reference value.
10. (Currently Amended) A method [[Method]] for diagnosing obesity in a subject, comprising measuring ~~the measurement of~~ at least two melanocortin peptides in a sample obtained from said subject, calculating ~~the calculation of~~ the ratio of the measured melanocortin peptides, and comparing ~~comparison of~~ the value of the ratio with a reference value.
11. (Currently Amended) A method [[Method]] for diagnosing imbalance in energy homeostasis in a subject, comprising measuring ~~the measurement of~~ at least two melanocortin peptides in a sample obtained from said subject, calculating ~~the calculation of~~ the ratio of the measured melanocortin peptides, and comparing ~~comparison of~~ the value of the ratio with a reference value.
12. (Currently Amended) A method [[Method]] for screening medicaments for the adverse reactions of imbalance in energy homeostasis, feeding/weight gain patterns or obesity in a subject to whom the medicament has been administered, comprising measuring ~~the measurement of~~ at least two [[2]] melanocortin peptides in a sample obtained from said subject, calculating ~~the calculation of~~ the ratio of the measured melanocortin peptides, and comparing ~~comparison of~~ the value of the ratio with a reference value.

13. **(Currently Amended)** A method [[Method]] for screening foods and/or diets for the adverse reactions of imbalance in energy homeostasis, feeding/weight gain patterns or obesity in a subject to whom the medicament has been administered, comprising measuring the measurement of at least two [[2]] melanocortin peptides in a sample obtained from said subject, calculating the calculation of the ratio of the measured melanocortin peptides, and comparing comparison of the value of the ratio with a reference value.
14. **(Original)** A method according to any one of claims 8 to 13, wherein the melanocortin peptide ratio calculated is the ratio of desacetyl- α -MSH to α -MSH.
15. **(Currently Amended)** A method according to any one of claims 8-13 ~~1 to 14~~, wherein the melanocortin peptides are measured by a biological response system, and wherein the resulting profile of response parameters is predictive of the risk of developing obesity or diagnostic of obesity, imbalance in energy homeostasis or disturbance in feeding/weight gain patterns.
16. **(Currently Amended)** A method [[Method]] of assessing risk of developing obesity, diagnosing obesity or diagnosing an imbalance in energy homeostasis or disturbance in feeding/weight gain patterns in a subject, comprising:
- measuring the amount of α -MSH and desacetyl- α -MSH in a sample obtained from the subject, either directly or by subtraction of one of the amount of α -MSH or desacetyl- α -MSH from a measured amount of total MSH in the sample,
 - calculating the ratio of the amounts of desacetyl- α -MSH to α -MSH.
 - comparing the ratio of desacetyl- α -MSH to α -MSH with a reference ratio.
17. **(Currently Amended)** A method according to any one of claims 8-13 and 16 ~~1 to 16~~, wherein the measurement is quantitative.
18. **(Currently Amended)** A method according to claim 14 ~~any one of claims 1 to 17~~, wherein α -MSH and desacetyl- α -MSH are separated from the sample before measurement.

19. (Original) A method according to claim 18, wherein α -MSH and desacetyl- α -MSH are separated by a procedure selected from the group consisting of chromatography, electrophoresis, immunocapture and affinity capture.
20. (Currently Amended) A method according to any one of claims 8-13 and 16 ~~1 to 14 or 16 to 19~~, wherein the melanocortin peptide, α -MSH or desacetyl- α -MSH is measured by an immuno-assay.
- 21-22. (Cancelled)
23. (Currently Amended) A method according to any one of claims 8-13 and 16 ~~1 to 22~~, wherein the subject is a mammal.
24. (Cancelled)
25. (Currently Amended) A method according to any one of claims 8-13 and 16 ~~1 to 24~~, wherein the sample is a biological fluid selected from the group consisting of whole blood, plasma, serum, saliva, sweat, urine, amniotic fluid, cord blood and cerebrospinal fluid.
- 26-28. (Cancelled)
29. (Currently Amended) A method according to claim 15 ~~any one of claims 15 or 21 to 28~~, wherein the biological response system is an *in vitro* cell, organ or tissue sample, or whole animal capable of responding to melanocortin peptides.
30. (Original) A method according to claim 29, wherein the *in vitro* cell is selected from the group consisting of primary osteoblasts, osteosarcoma cell line, hypothalamic cell line, adipocytes, myocytes, melanoma cells and anterior pituitary cells.
31. (Original) A method according to claim 29, wherein the organ or tissue sample is that of hypothalamus.
32. (Currently Amended) A method according to claim 15 ~~any one of claims 15 or 21 to 31~~, wherein the profile of response parameters measured comprise one or more proteins or cellular events which differentiate between normal subjects and those at risk of developing obesity or having obesity, or those with an imbalance in energy homeostasis, or disturbance in feeding/weight gain patterns.

33. **(Original)** A method according to claim 32, wherein the one or more proteins are selected from the group consisting of heat shock protein homologue, glyceraldehyde-3-phosphate-dehydrogenase, aldo-keto reductase, citrate synthase, creatine kinase, pyruvate synthase alpha-chain, f1 ATPase beta-chain, tubulin beta-chain, proteins involved in the melanocortin peptidergic axis, proteins involved in signalling pathways and membrane-bound proteins.
34. **(New)** A method according to claim 16, wherein α -MSH and desacetyl- α -MSH are separated from the sample before measurement.